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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/654,971	09/05/2003	Takayuki Araki	Q77316	5657

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EXAMINER

HU, HENRY S

ART UNIT	PAPER NUMBER
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1713

DATE MAILED: 01/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/654,971

Applicant(s)

ARAKI ET AL.

Examiner

Henry S. Hu

Art Unit

1713

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Election of December 2, 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) 11-22 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 1-22 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>2 pages</u> . | 6) <input type="checkbox"/> Other: _____ |

Art Unit: 1713

1. It is noted that Applicants' **Election** filed on December 2, 2005 was received. The Applicants have elected **without traverse on Claims 1-8** (generic claims in Group I) along with Claims 9 and 10 by electing Species (6) for a = 1-3; b = 0, c = 1 (Claims 1-10 are thereby elected). Claims 1-22 are now pending with one independent claim (Claim 1), while Claims 11-22 are withdrawn from consideration. An action follows.

DETAILED ACTION

Double Patenting

2. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

3. **Claims 8-10** are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over **Claims 29-31** (original Claims 1-3) of copending Application No. **10/654,888 to Araki et al.** (with priority date 3-8-2001 and the same assignee).

This is a provisional obviousness-type double patenting rejection since the conflicting claims have not yet been patented. Although the conflicting claims are not identical, they are not

Art Unit: 1713

patentably distinct from each other. The subject matter claimed in the instant application is obviously disclosed in the referenced copending application and would be covered by any patent granted on that copending application since the referenced copending application and the instant application are claiming common subject matter, as follows:

Parent Claim 1 of present application relates to a fluorine-containing resin composition comprising (I) a fluorine-containing prepolymer and (II) a compound containing a rare earth metal ion and/or a rare earth metal element, wherein (1) the fluorine-containing prepolymer (I) is a non-crystalline polymer having a fluorine content of not less than 25 % by weight and (2) the fluorine-containing prepolymer (I) has a cure site in a side chain of the polymer and/or at an end of a trunk chain of the polymer.

In view of Species (6) for $a = 1-3$; $b = 0$, $c = 1$ being elected, the fluorine-containing polymer described in dependent **Claim 8** has a structural unit from $CX^1X^2= CX^3-(CX^4X^5)_a-(C=O)_b-(O)_c-R_f$ wherein the factors of X^1 and X^2 can be the same or different from H or F; X^3 is H, F, CH_3 or CF_3 ; X^4 and X^5 can be the same or different from H, F or CF_3 ; R_f can be organic group (Y)-containing alkylene or alkylene ether. **Claims 9 and 10** are dependent from Claim 8.

In a close examination, **Claims 29-31** (after pre-amendment on original Claims 1-3) in copending Application No. 10/654,888 to Araki et al. relates to a mixture of (A) a rare earth metal ion and (B) a fluorine-containing copolymer having functional group. In a close examination, “888” is silent about including a cure site on the copolymer component (B) in

Art Unit: 1713

parent Claim 29. However, “888” has disclosed in specification that a cure site may be present in the copolymer (B) in a side chain of a polymer and/or at an end of a trunk chain of the polymer. Also the cure site may be contained in the Rf group of (B) component (see page 57, lines 3-20). By adding a cure site in the polymer, a crosslinkable product may be obtained (page 58, line 21). Therefore, one having ordinary skill in the art would therefore have found it obvious to modify the composition by using a cure site-containing copolymer as (B) component as taught by Araki “888”. By this modification, one would expect to obtain a better and more diversified fluorinated copolymer with improved properties after curing since a crosslinkable cure site is existed in the copolymer. Therefore, both applicants are not patentably distinct and an **ODP rejection** is applied.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

5. *The limitation of parent Claim 1 in present invention relates to a fluorine-containing resin composition comprising (I) a fluorine-containing prepolymer and (II) a compound containing a rare earth metal ion and/or a rare earth metal element, wherein (1) the fluorine-*

Art Unit: 1713

containing prepolymer (I) is a non-crystalline polymer having a fluorine content of not less than 25 % by weight and (2) the fluorine-containing prepolymer (I) has a cure site in a side chain of the polymer and/or at an end of a trunk chain of the polymer. The fluorine-containing polymer described in dependent Claim 8 has a structural unit from $CX^1X^2=CX^3-(CX^4X^5)_a-(C=O)_b-(O)_c-Rf$ wherein the factors of X^1 and X^2 can be the same or different from H or F; X^3 is H, F, CH_3 or CF_3 ; X^4 and X^5 can be the same or different from H, F or CF_3 ; Rf can be organic group (Y)-containing alkylene or alkylene ether; and a is integer of 0-3, while b and c can be 0 or 1. Claims 9 and 10 are pending now since Species (6) for $a = 1-3$; $b = 0$, $c = 1$ is elected. See other limitations of dependent Claims 2-8 and 9-10.

6. Claims 1-7 are rejected under 35 U.S.C. 102(a) as being anticipated by Kolke et al. (EP 1,072,905 A1).

Regarding the limitation of parent Claim 1, Kolke et al. have disclosed a composition to be useful in making light transmitting device. Such a composition is made from mixing a non-crystalline fluoropolymer (preferably to be a "per"fluoro-polymer) with a fluorinated metal-betadecarbonyl chelate compound (see Tables 1-2 on pages 5-6; page 4, line 2-46), wherein non-crystalline perfluoropolymer contains no C-H bond at all while other fluorinated copolymers may contain non-fluorinated comonomer(s) such as alkyl acrylate (see perfluoropolymers in formula 1-3 on page 3, particularly see formula 1; page 3, line 15-57; see other non-fluorinated comonomer on page 3, line 16-17). By doing so, a minimum transmission loss when using a near-infrared wavelength can be thereby obtained (page 3,

Art Unit: 1713

line 18-19). Kolke further discloses that **it is preferable to use fluoropolymer whenever fluorinated metal chelate compound is used so as to get better solubility and/or compatibility** (page 4, line 44-48). With respect to the limitation on “**prepolymer**”, Kolke’s fluorinated copolymers having non-fluorinated comonomer(s) may carry on main chain as pendant group or end group some functional group and/or some residual carbon-carbon double bond, which are capable of crosslinking. Therefore, Kolke anticipates the limitation of parent Claim 1.

7. Regarding **Claims 2-4**, a minimum transmission loss (which is equivalent to low absorption) when using a near-infrared wavelength would be obtained since the structure of Kolke’s fluoropolymers contains no or very low C-H bond.

Regarding **Claims 5-7**, Kolke’s polymers may contain some carbon-carbon double bond as cure site purpose (column 4, line 33-43).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

- (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 1713

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

9. Claims 1-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fryd et al. (US 6,869,693 B2 with **an effective US filing date of October 10, 2000** or its equivalent EP WO 02/31896 A2) in view of Kolke et al. (EP 1,072,905 A1).

Regarding the limitation of parent **Claim 1, Fryd** in each of US and WO patents has disclosed the preparation of polymers having attached luminescent metal complexes, wherein the complex is made from coordination of functional groups including the claimed **enolate or beta-dicarbonyl ligand**, see column 9, line 33 – column 10, line 7; column 3, line 11-22) to metal ions (abstract, line 1-10; column 12, line 17-63; see functionalized polymers at column 4, line 11-27; see various metal compounds at column 5, line 57 – column 6, line 14). In a close examination on Fryd's disclosure, **fluoropolymers** and "**many**" other types of polymers (or copolymers) including **polyvinyl ethers** or polyacrylates are used to carry functional groups (column 4, line 11-27). The key point is that such functional groups are first-type functional groups including beta-dicarbonyl, carboxylic acid, alkoxyl and the like (column 3, line 1-22); only some portions of functional groups are contributed to form metal chelate complexes

Art Unit: 1713

(column 2, line 55-65). Therefore, **Fry's polymer is clearly related to "a prepolymer" with some residual functional groups** (which is equivalent to **a cure site**) for latter crosslinking purpose (see "**non**"-functional groups on column 4, line 33-43).

10. In a close examination, **Fryd is silent about using a non-crystalline fluorinated prepolymer or precopolymer with a fluorine content of not less than 25 wt%.** Kolke teaches that in the course of making light transmitting device, a composition made from mixing a **non-crystalline "per"fluoro-polymer** with a **fluorinated metal-betadikarbonyl chelate compound** may be used (see Table 1 on page 5; page 4, line 2-46), wherein non-crystalline **perfluoropolymer contains no C-H bond at all** (see perfluoropolymers in formula 1-3 on page 3, particularly see formula 1; page 3, line 15-57). By doing so, **a minimum transmission loss when using a near-infrared wavelength** can be thereby obtained (page 3, line 18-19).

Additionally, Kolke teaches that **it is preferable to use fluoropolymer whenever fluorinated metal chelate compound is used so as to get better solubility and/or compatibility** (page 4, line 44-48). Some of Kolke's many polymers would fall within the scope of $a = 1-3$; $b = 0$, $c = 1$ and the claimed ether-type structure of Claim 45.

11. In light of the fact that both references are preparing similar fluoropolymer/metal chelate compositions, one having ordinary skill in the art would therefore have found it obvious to modify Fryd's **pre-polymeric composition** by using **an ether-type fluoropolymer (preferably to be a perfluoropolymer) carrying a fluorinated metal chelate as a moiety inside the polymer's pendant group** as taught by Kolke. By this modification, one would expect to

Art Unit: 1713

obtain a better and more diversified fluorinated copolymer with improved optical transparent properties to be excellent in reducing transmission loss when using a near infrared light and with better solubility and/or compatibility.

12. Regarding **Claims 2-4**, a minimum transmission loss (which is equivalent to low absorption) when using a near-infrared wavelength would be obtained since Kolke's fluoropolymers contain no or very low C-H bond.

Regarding **Claims 5-7**, "**non**"-functional groups and other disclosure on types of polymers may indicate carbon-carbon double bond as cure site purpose (column 4, line 33-43).

Regarding **Claims 8-10**, Kolke has taught **polymer or copolymer carrying the specific and claimed "M" ether-type structure of formula (2)**. Additionally, some of Kolk's fluoropolymers would be within the scope of $a = 1-3$; $b = 0$, $c = 1$ according to above-mentioned discussion for Claim 1. Although Fryd/Kolke, in combination or alone, does not disclose exactly the same structure on claimed Rf, the instant Application does not show **criticality along with unexpected result** why only such a claimed Rf structure can be used.

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicants' disclosure. The following references relate to a fluorine-containing resin composition comprising

Art Unit: 1713

a fluorine-containing and cure-site-containing prepolymer, and a compound containing a rare earth metal ion and/or a rare earth metal element:

US Patent No. 6,176,895 B1 to DeSimone et al. only discloses the use of ligand-containing polymer to extract metal ions in liquid or supercritical carbon dioxide, wherein the ligand bound to the polymer is at a plurality of locations along the chain length (abstract, line 1-15; Figure 1; column 2, line 25-65). **Ligand may be in various types including include beta-diketone, phosphate, phosphonate or others (column 4, line 7-41). Some fluorinated polymers may be used (column 4, line 1-6). However, the claimed fluorine content of not less than 25 wt% is not disclosed; such fluoropolymers are only related to acrylate type (not within the scope of $a = 1-3$; $b = 0$, $c = 1$) according to the disclosure from the two US patents cited therein.**

EP Patent No. 622,878 A1 to Sharma et al. only discloses a composition by dissolving a rare earth metal complex into a polymeric matrix (abstract, line 1-3). The complex compound is made from coordination of **beta-dicarbonyl** functional groups to erbium metal ion (page 3, line 6-19). Sharma is silent about three things: (A) the claimed fluorine content of not less than 25 wt%, (B) polymer or copolymer using the specific and claimed "M" ether-type structure of formula (2), and (C) using a fluorinated beta-dicarbonyl ligand.

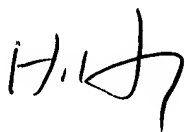
US Patent No. 6,292,292 B1 to Garito et al. only discloses the preparation of polymers having attached optical amplifying erbium metal complex, wherein the complex is made from

Art Unit: 1713

coordination of **phosphinate** functional groups to erbium metal ion (abstract, line 1-20; Figure 1; column 2, line 40-56). The claimed fluorine content of not less than 25 wt% is not disclosed.

No metal-dicarbonyl chelating is used at all.

14. Any inquiry concerning this communication or earlier communication from the examiner should be directed to **Dr. Henry S. Hu** whose telephone number is **(571) 272-1103**. The examiner can be reached on Monday through Friday from 9:00 AM –5:00 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reached on (571) 272-1114. The fax number for the organization where this application or proceeding is assigned is **(571) 273-8300** for all regular communications. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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Patent Examiner, Art Unit 1713, USPTO

January 9, 2006



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